# Lowercroft Primary School

# End Points for Mathematics by Area of Mathematics

# October 2020

# Place Value

| | Autumn | Spring | Summer |
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| Reception | • I can recognise, order and write numerals to 5 and touch count 5 objects accurately<br>• I can recognise various representations of numbers up to 5<br>• I can compare identical and non-identical sets of objects<br>• I can compare the quantity within sets of objects recognising which set has fewer | • I can count, recognise, order and write all numbers up to 10<br>• I can recognise various representations of numbers up to 10<br>• I understand the value of 0 | • I can count, recognise, order and write numbers up to 20 and say a number which is one more or one less |
| Year 1 | • I count to 20, forwards and backwards beginning with 0 or 1, or from any given number<br>• I can read and write numbers to 20 in numerals and words<br>• Given a number between 1 – 20, I can identify 1 more or 1 less | • I count to 50, forwards and backwards beginning with 0 or 1, or from any given number<br>• I can read and write numbers to 50 in numerals<br>• Given a number between 1 – 50, I can identify 1 more or 1 less<br>• I can count in multiples of 2, 5 and 10 | • I count to 100, forwards and backwards beginning with 0 or 1, or from any given number<br>• I can read and write numbers to 100 in numerals<br>• Given a number between 1 – 100, I can identify 1 more or 1 less |
| Year 2 | • I read and write numbers to at least 100 in numerals and words<br>• I recognise the place value of each digit in a 2-digit number<br>• I compare and order numbers from 0 to 100 using <, > and. =<br>• I can count in steps of 2, 5 and 10 from any number, forwards and backwards<br>• I can count in steps of 3 from 0 | | |
| Year 3 | • I count from 0 in multiples of 50 and 100.<br>• I can find 10 or 100 more, or less, than a given number<br>• I read and write numbers to 1,000 in numerals and words | | |

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| | • I compare and order numbers up to 1000.<br>• I recognise the place value of each digit in a 3-digit number | | |
| Year 4 | • I count backwards through zero to include negative numbers<br>• I count in multiples of 25 and 1000<br>• I compare and order numbers beyond 1000<br>• I round any number to the nearest 10, 100 or 1000 | | |
| Year 5 | • I read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit<br>• I count forward or backwards in steps of powers of 10 for any given number up to 1,000,000<br>• I interpret negative numbers in context, count forwards and backwards with positive and negative numbers, including through zero<br>• I read Roman numerals to 1000 and recognise years written in Roman numerals<br>• I round any number up to 1,000,000 to the nearest 10, 100, 1000, 10000 or 100000 | | |
| Year 6 | • I read, write, order and compare numbers up to 10,000,000 and determine the value of each digit<br>• I use negative numbers in context and calculate intervals across zero<br>• I round any whole number to the required degree of accuracy<br>• I solve number and practical problems that involve all other number and place value objectives | | |

# Addition and Subtraction

| | Autumn | Spring | Summer |
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| Reception | • I can find 1 more or 1 less than a number to 5 | • I can confidently add numbers to 5, recognising all combinations<br>• I can confidently combine 2 sets of objects to find the whole number<br>• I understand and recall different combinations which total 10 | • I can count on and back when adding or subtracting two 1-digit numbers<br>• I understand that the term 'double' means twice as many |
| Year 1 | • I read, write and interpret mathematical statements involving + - = signs<br>• I represent and use number bonds and related subtractions facts within 10<br>• I add and subtract 1-digit numbers to 10 including zero | • I represent and use number bonds and related subtractions facts within 20<br>• I add and subtract 1-digit and 2- digit numbers to 20, including zero<br>• I add and subtract 1-digit and 2- digit numbers to 20, including zero<br>• I solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and missing number problems | |
| Year 2 | • I understand that addition of any two numbers can be done in any order (commutative) and subtraction of one number from another cannot<br>• I recall and use addition and subtraction facts to 20 fluently and derive and use related facts up to 100<br>• I add and subtract numbers mentally, including: 2-digit numbers and ones; 2-digit numbers and tens; two 2-digit numbers; adding three 1-digit numbers, including crossing the tens boundary<br>• I recognise and use the inverse relationship between addition and subtraction and use this to check calculations and missing number problems | | |
| Year 3<br><br>*See calculation Policy* | • I add and subtract numbers mentally, including: 3- digit number and ones; 3-digit numbers and tens; 3- digit numbers and hundreds | | |

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| | • I add and subtract numbers with up to 3 digits, using formal written methods of columnar addition and subtraction<br>• I estimate the answer to a calculation and use the inverse operations to check my answers<br>• I solve word problems including missing number problems, number facts, place value and more complex addition and subtraction | | |
| Year 4<br><br>*See calculation Policy* | • I add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction, where appropriate<br>• I estimate and use inverse operations to check answers to a calculation<br>• I solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why | | |
| Year 5<br><br>*See calculation Policy* | • I add and subtract numbers mentally with increasingly large numbers<br>• I add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)<br>• I use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy<br>• I solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why | | |
| Year 6 | • I perform mental calculations, including with mixed operations and large numbers<br>• I use knowledge of the order of operations to carry our calculations involving the four operations<br>• I use estimation to check answers to calculations and determine, in the context of a problem, levels of accuracy | • I solve problems involving addition, subtraction, multiplication and division | |

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| | • I solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why | | |

# Multiplication and Division

| | Autumn | Spring | Summer |
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| Reception | | | • I can share items into two equal groups<br>• I understand that the term double, means twice as many |
| Year 1 | | | • I solve one-step problems involving multiplication and division, by calculating the answer using concrete objects, pictorial representations and arrays with the support of my teacher |
| Year 2 | | • I recall and use multiplication and division facts for the 2, 5 and 10 tables, including recognising odd and even numbers<br>• I understand that multiplication of two numbers can be one in any order (commutative) and division of one number by another cannot<br>• I calculate the mathematical statements for multiplication and division within the multiplication tables and write them using the x ÷ and = signs.<br>• I recognise that division is the inverse of multiplication and use to check calculations | |
| Year 3<br><br>*See calculation Policy* | • I recall and use the multiplication and division facts for the 3, 4 and 8 tables | • I write and calculate mathematical statements for multiplication using known multiplication tables, including 2- digit x 1-digit, using mental and progressing to formal written methods<br>• I write and calculate mathematical statements for division using known multiplication tables, including 2-digit x 1-digit, using mental and progressing to formal written methods<br>• I practise written methods of multiplication and division, including a high focus on reasoning | |
| Year 4 | • I use place value, known and derived facts to multiply and divide mentally, including multiplying by 0 and 1; multiplying three numbers together | • I recall multiplication and division facts for tables up to 12x12<br>• I recognise and use factor pairs and commutativity in mental calculations | |

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| *See calculation Policy* | | • I multiply 2-digit and 3-digit numbers by a 1-digit number using formal written layout<br><br>• I divide 2-digit and 3-digit numbers by a 1-digit number using formal written layout with no remainder | |
| Year 5 | • I identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers<br><br>• I know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers and establish whether a number up to 100 is prime and recall prime numbers up to 19<br><br>• I recognise and use square numbers and cube numbers, and the notation for squared and cubed<br><br>• I multiply and divide whole numbers and those involving decimals by 10, 100 and 1000<br><br>• I solve problems involving multiplication and division using knowledge of factors and multiples, squares and cubes | • I multiply and divide numbers mentally drawing upon known facts<br><br>• I multiply numbers up to 4-digits by a 1-digit or 2-digit number<br><br>• I divide numbers up to 4-digits by a 1-digit number appropriately for the context<br><br>• I solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding of the equals' sign | |
| Year 6 | • I identify common factors, common multiples and prime numbers<br><br>• I perform mental calculations, including with mixed numbers and large numbers<br><br>• I multiply multi-digit numbers up to 4-digits by a 2-digit whole number using the formal written method of long multiplication<br><br>• I divide numbers up to 4-digits by a 2-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context<br><br>• I divide numbers up to 4-digits by a 2-digit number using the formal written method of short division, where appropriate, interpreting remainders according to the context | | • I solve problems involving addition, subtraction, multiplication and division |

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| | • I solve multiplication and division multi-step problems in contexts, deciding which operations and methods to use and why<br><br>• I use knowledge of the order of operations to carry out calculations involving the four operations | | |

# Fractions, Decimals and Percentages

| | Autumn | Spring | Summer |
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| Year 1 | | | • I recognise, find and name a half as one of two equal parts of an object, shape or quantity<br>• I recognise, find and name a quarter as one of four equal parts of an object, shape or quantity |
| Year 2 | | • I write simple fractions and recognise the equivalence<br>• I recognise, find, name and write factions 1/3, 1/4, 2/4, 1/2, 3/4 of a length, shape, set of objects, or quantity | |
| Year 3 | | | • I recognise and show, using diagrams, equivalent fractions with small denominators<br>• I recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators<br>• I compare and order unit fractions, and fractions with the same denominators<br>• I add and subtract fractions with the same denominator within one whole<br>• I count up and down in tenths; recognise that tenths arise from dividing an object into ten equal parts and in dividing numbers or quantities by 10 |
| Year 4 | | • I recognise and show, using diagrams, families of common equivalent fractions<br>• I add and subtract fractions with the same denominator<br>• I count up and down in hundredths; recognise that hundredths arise from dividing an object into one 100 equal parts and in dividing numbers or quantities by 100<br>• I recognise and write decimals equivalents of any number of tenths or hundredths | • I compare numbers with the same number of decimal places up to two decimal places<br>• I recognise and write decimal equivalents to 1/4, 1/2 and 3/4<br>• I round decimals with one decimal place to the nearest whole number |

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| | | • I find the effect of dividing a 1- digit or 2-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths | |
| Year 5 | | • I identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths<br>• I recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements<br>• I compare and order fractions whose denominators are all multiples of the same number<br>• I add and subtract fractions including mixed numbers<br>• I can multiply fractions and mixed numbers by whole numbers<br>• I read and write decimal numbers as fractions, e.g. 0.71 = 71/100<br>• I round decimals with two decimal places to the nearest whole number and to one decimal place<br>• I read, write, order and compare numbers with up to three decimal places<br>• I recognise the percent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal<br>• I can make connections between percentages, fractions and decimals (for example, 100% represents a whole quantity and 1% is 1/100 part, 50% is half , 25% is a quarter, and relate this to finding 'fractions of'<br>• Solve problems which require knowing percentage and decimal equivalents of 1/2, 1/4, 1/5, 2/5, 4/5 and those fractions with a denominator of a multiple of 10 or 25 | • I add and subtract decimals to 3dp, crossing the whole<br>• I multiply and divide decimals by 10,100 and 1000 |

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| | | • Find 10%, 25%, 50% and 75% of any given number by relating percentages to fractions | |
| Year 6 | • I compare and order fractions, including fractions<br>• I use common factors to simplify fractions; use common multiples to express fractions in the same denomination<br>• I recall and use equivalences between simple fractions, decimals and percentages, including different contexts<br>• I add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions<br>• I multiply simple pairs of proper fractions, writing the answer in the simplest form<br>• I divide proper fractions by whole numbers<br>• I associate a fraction with division to calculate decimal fraction equivalents, for simple fractions<br>• Find any percentage of amount, e.g. 5%, 20% or 34% of an amount by relating percentage to fraction equivalents | | |

# Measure

| | Autumn | Spring | Summer |
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| Reception | • I can use language related to time<br>• I can order and sequence familiar events<br>• I can measure short periods of time in simple ways<br>• I can compare the size and height of objects<br>• I can sort objects according to the same rule | | • I can compare and order objects according to length, height and weight using correct mathematical vocabulary<br>• I can extend my understanding of capacity from full and empty using other terms such as half-full, nearly full or empty etc |
| Year 1 | | • I compare, describe and solve practical problems for: lengths and heights and mass/weight<br>• I compare, describe and solve practical problems for: capacity and volume<br>• I measure and begin to record the following: mass/weight. I measure and begin to record the following: length and heights<br>• I can measure and begin to record the following: capacity and volume | • I can tell the time to the hour and half past the hour and draw the hands on the clock face to show these times<br>• I can sequence events in chronological order using language such as before, after, next, first, today, yesterday, tomorrow, evening, afternoon<br>• I recognise and use language relating to dates, including days of the week, weeks, months and years<br>• I compare, describe and solve practical problems for: time<br>• I recognise and know the value of different denominations of coins and notes |
| Year 2 | • I recognise and use symbols for pounds (£) and pence (p); combine amounts to make particular values<br>• I solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change<br>• I find different combinations of coins that equal the same amounts of money<br>• I solve simple problems in a practical context involving addition and subtraction of money of the same unit, including giving change | • I compare and order lengths and record the results using >, < and =<br>• I choose and use appropriate standard units to estimate and measure: length/height in any direction (m/cm); mass (kg/g) to the nearest appropriate unit, using rulers and scales | • I compare and order mass, and record the results using >, < and =<br>• I compare and order volume/capacity and record the results using >, < and =<br>• I choose and use appropriate standard units to estimate and measure: length/height in any direction (m/cm); mass (kg/g) to the nearest appropriate unit, using rulers and scales<br>• I choose and use appropriate standard units to estimate and measure: temperature ( C); |

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| | | | capacity (l/ml) to the nearest appropriate unit, using thermometers and measuring vessels<br>• I tell and write the time to quarter past/to the hour and draw the hands on a clock face to show these times<br>• I tell and write the time to five minutes, including quarter past/to the hour and draw the hands on a clock face to show these times<br>• I compare and sequence intervals of time |
| Year 3 | • I add and subtract amounts of money to give change, using both £ and p in practical contexts. | • I measure, compare, add and subtract: lengths (m/cm/mm)<br>• I measure the perimeter of simple 2D shapes.<br>• I add and subtract measures (length, mass and volume) with up to 3 digits, using formal written methods of columnar addition and subtraction | • I estimate and read time with increasing accuracy to the nearest minute; Tell and write the time from an analogue clock, including using Roman numerals from I to XII<br>• I read 12-hour and 24-hour clocks<br>• I record and compare time in terms of seconds, minutes, hours<br>• I use vocabulary such as o'clock, am/pm, morning, afternoon, noon and midnight<br>• I know the numbers of seconds in a minute and the number of days in each month, year and leap year<br>• I compare durations of events, for example to calculate time taken by particular events or tasks<br>• I measure, compare, add and subtract: mass (kg/g) and volume/ capacity (l/ml) |
| Year 4 | • I convert between different units of measure (e.g. km to m; hr to min)<br>• I measure and calculate the perimeter of a rectilinear figure (including squares) in cm and m | • I find the area of rectilinear shapes by counting squares | • I read, write and convert time between analogue and digital 12- and 24-hour clocks.<br>• Estimate, compare and calculate different measures, including money in pounds and pence |
| Year 5 | • I measure and calculate the perimeter of composite rectilinear shapes in cm and m | | • I estimate volume (e.g. using 1 $cm^3$ blocks to build cuboids, including cubes) and capacity (e.g. using water) |

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| | • I calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres ($cm^2$) and square metres ($m^2$) and estimate the area of irregular shapes | | • I convert between different units of metric measure (e.g. km/m; cm/m; cm/mm; g/kg; l/ml<br>• I solve problems involving converting between units of time<br>• I understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints |
| Year 6 | | • I convert between miles and km<br>• I use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to three decimal places<br>• I solve problems involving the calculation and conversion of units of measure, using decimal notation to three decimal places where appropriate<br>• I recognise that shapes with the same areas can have different perimeters and vice versa<br>• I calculate the area of parallelograms and triangles<br>• I recognise when it is possible to use formulae for area and volume of shapes | |

# Geometry

| | Autumn | Spring | Summer |
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| Reception | • I can sort objects according to the same rule | • I can recognise and use appropriate vocabulary to describe the position of an object<br>• I can use appropriate directional language<br>• I can confidently recognise and name 2d shapes and their properties<br>• I am becoming familiar with 3d shapes and begin recognising and naming them in the environment | • I can copy, continue and create a pattern that uses items more than once |
| Year 1 | • I recognise and name common 2d shapes including circles, rectangles (including squares) and triangles<br>• I recognise and name common 3d shapes including cuboids (including cubes), pyramids and spheres | | • I can describe position, direction and movement including half, quarter and three-quarter turns |
| Year 2 | | • I identify and describe the properties of 2D shapes, including the number of sides and line symmetry in a vertical line<br>• I identify and describe the properties of 3D shapes, including the number of edges, vertices and faces<br>• I identify 2D shapes on the surface of 3D shapes.<br>• I compare and sort common 2D and 3D shapes and everyday objects | • I order and arrange combinations of mathematical objects in patterns and sequences<br>• I use mathematical vocabulary to describe position, direction and movement, including movement in a straight line distinguishing between rotation as a turn, and in terms of right angles for a quarter, half and three-quarter turns (clockwise and anti-clockwise) |
| Year 3 | | | • I make 3D shapes using modelling materials; recognise 3D shapes in different orientations; and describe them<br>• I draw 2D shapes<br>• I recognise angles are a property of shape or a description of a turn<br>• I identify right angles, recognise that two right angles make a half-turn, three make three quarters and four a complete turn<br>• I identify whether angles are greater than or less than a right angle |

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| | | | • I identify horizontal and vertical lines and pairs of perpendicular and parallel lines |
| Year 4 | | | • I identify acute and obtuse angles, and compare and order angles up to two right angles by size<br>• I compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes<br>• I identify lines of symmetry in 2D shapes presented in different orientations<br>• I complete a simple symmetric figure with respect to a specific line of symmetry<br>• I describe positions on a 2D grid as coordinates in the first quadrant<br>• I describe positions on a 2D grid as coordinates in the first quadrant<br>• I describe movements between positions as translations of a given unit to the left/right and up/down |
| Year 5 | | | • I know angles are measured in degrees<br>• I estimate and compare acute, obtuse and reflex angles<br>• I identify angles at a point on a straight line and 1/2 a turn (total 180 ); and I identify angles at a point; one whole turn (total 360 ) and other multiples of 90<br>• I draw given angles, and measure them in degrees |
| Year 6 | | | • I compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons<br>• I draw 2D shapes using given dimensions and angles |

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| | | | • I recognise, describe and build simple 3D shapes, including making nets<br><br>• I recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles<br><br>• I illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius |

| Statistics | | | |
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| | Autumn | Spring | Summer |
| Reception | | | |
| Year 1 | | | |
| Year 2 | | • I interpret and construct: pictograms; tally charts; block diagrams and simple tables<br>• I ask and answer simple questions by counting the number of objects in each category and sorting the categories by quantity<br>• I ask and answer questions about totalling and compare categorical data | |
| Year 3 | | • I interpret and present data using: bar charts; pictograms and tables<br>• I solve 1-step and 2-step questions such as 'How many more?' and 'How many fewer?' using information presented in scaled bar charts, pictograms and other graphs | |
| Year 4 | | | • I interpret and present discrete and continuous data using appropriate graphical methods, including: bar charts and time graphs |
| Year 5 | • I complete, read and interpret information in: tables, including timetables<br>• I solve comparison, addition and difference problems using information presented in a line graph | | |
| Year 6 | | • I interpret and construct: pie charts and line graphs and use these to solve problems<br>• I calculate and interpret the mean as an average | |

| Ratio and Proportion | | | |
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| | Autumn | Spring | Summer |
| Reception | | | |
| Year 1 | | | |
| Year 2 | | | |
| Year 3 | | | |
| Year 4 | | | |
| Year 5 | | | |
| Year 6 | | • I solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts<br>• I solve problems involving the calculation of percentages of whole numbers or measures such as 15% of 360 and the use of percentages for comparison | |

| Algebra | | | |
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| | Autumn | Spring | Summer |
| Reception | | | |
| Year 1 | | | |
| Year 2 | | | |
| Year 3 | | | |
| Year 4 | | | |
| Year 5 | | | |
| Year 6 | | • I express missing number problems algebraically and use simple formulae<br>• I find pairs of numbers that satisfy number sentences with two unknowns | |